CLAIMS

Having thus described the aforementioned invention, we claim:

1. A closure for shielding, and selectively providing access to, the targeting assembly of a particle accelerator, the particle accelerator including a housing defining an opening for accessing the targeting assembly, the particle accelerator being surrounded by an outer shielded enclosure providing selective access to the particle accelerator, said closure comprising at least a first door for selectively covering the opening in the housing of the particle accelerator, and said closure including a door mounting assembly for mounting said first door on the housing of the particle accelerator, whereby said first door of said closure selectively covers the opening in the housing of the particle accelerator when access to the particle accelerator through the outer shielded enclosure is provided.

2. The closure of Claim 1 wherein said first door includes copper radiation shielding.

3. The closure of Claim 1 wherein said door mounting assembly includes at least a first hinge assembly to facilitate pivotally mounting said first door on the housing of the particle accelerator.

4. The closure of Claim 1 wherein said door mounting assembly includes a frame for being mounted on the housing of the particle accelerator and for supporting said door.

5. The closure of Claim 4 wherein said door mounting assembly includes at least a first hinge assembly for pivotally mounting said door to said frame.

6. The closure of Claim 4 wherein said frame and said door include copper shielding material.

7. The closure of Claim 4 wherein said frame and said door are fabricated substantially of copper.

8. The closure of Claim 1 wherein said door mounting assembly includes a frame for being received about the opening in the housing of the particle accelerator, said frame including a sill member, a header member, and first and second jamb members, said door mounting assembly also including at least a first hinge assembly for pivotally mounting said door on said frame, whereby said first door is movable from a closed position to an open position.

9. The closure of Claim 8 wherein said closure further comprises a second door, and said door mounting assembly includes a second hinge assembly for pivotally mounting said second door on said frame, whereby said second door is movable from a closed position to an open position.

10. The closure of Claim 9 wherein each said first and second door is substantially rectangular and defines outboard and inboard edges, and upper and lower edges, and wherein said each said first and second jamb member defines a front surface, said outboard edge of said first door being pivotally secured to said first sill member with said first hinge assembly such that said first door covers said front surface of said first jamb member when said first door is in said closed position, and said outboard edge of said second door being pivotally secured to said second sill member with said second hinge assembly such that said second door covers said front surface of said second jamb member when said second door is in said closed position.

11. The closure of Claim 10 wherein said sill member of said frame defines a first rabbet along an upper forward edge of said sill member for receiving said lower edges of said first and second doors when said first and second doors are in said closed position, and wherein said header member of said frame defines a second rabbet along a lower forward edge of said header member for receiving said upper edges of said first and second doors when said first and second doors are in said closed position.

12. The closure of Claim 11 wherein said first door defines a third rabbet along the inside of said inboard edge of said first door, and wherein said second door defines a fourth rabbet along the outside of said inboard edge of said second door, whereby said inboard edges of said first and second doors overlap when said first and second doors are in said closed position.

13. The closure of Claim 12 wherein said first and second doors and said frame are fabricated substantially of copper.

14. A closure for shielding, and selectively providing access to, the targeting assembly of a particle accelerator, the particle accelerator including a housing defining an opening for accessing the targeting assembly, the particle accelerator being surrounded by an outer shielded enclosure providing selective access to the particle accelerator, said closure comprising:

first and second doors for selectively covering the opening in the housing of the particle accelerator, each said first and second door being movable from a closed position whereby the targeting assembly is shielded

to an open position, whereby access to the targeting assembly is provided, and

a door mounting assembly for mounting said first and second doors on the housing of the particle accelerator, said door mounting assembly including a frame for being secured about the opening in the particle accelerator accessing the targeting assembly, said door mounting assembly also including a first hinge assembly for pivotally securing said first door to said frame and a second hinge assembly for pivotally securing said second door to said frame, whereby said first and second doors of said closure selectively cover, and reduce radiation emissions from, the opening in the housing of the particle accelerator and the targeting assembly therein when access to the particle accelerator through the outer shielded enclosure is provided.

15. The closure of Claim 14 wherein said first and second doors are fabricated substantially of copper.

16. The closure of Claim 15 wherein said frame is fabricated substantially of copper.

17. The closure of claim 14 wherein said frame includes a sill member, a header member, and first and second jamb members.

18. The closure of Claim 17 wherein each said first and second door is substantially rectangular and defines outboard and inboard edges, and upper and lower edges, and wherein said each said first and second jamb member defines a front surface, said outboard edge of said first door being pivotally secured to said first sill member with said first hinge assembly such that said first door covers said front surface of said first jamb member when said first door is in said closed position, and said outboard edge of

said second door being pivotally secured to said second sill member with said second hinge assembly such that said second door covers said front surface of said second jamb member when said second door is in said closed position.

19. The closure of Claim 18 wherein said sill member of said frame defines a first rabbet along an upper forward edge of said sill member for receiving said lower edges of said first and second doors when said first and second doors are in said closed position, and wherein said header member of said frame defines a second rabbet along a lower forward edge of said header member for receiving said upper edges of said first and second doors when said first and second doors are in said closed position.

20. The closure of Claim 19 wherein said first door defines a third rabbet along the inside of said inboard edge of said first door, and wherein said second door defines a forth rabbet along the outside of said inboard edge of said second door, whereby said inboard edges of said first and second doors overlap when said first and second doors are in said closed position.

21. The closure of Claim 20 wherein said closure further comprises a locking mechanism for securing said first and second doors in said closed position.

22. The closure of Claim 21 wherein said locking mechanism includes a first and second securing pins, said first securing pin being releasably received through a hole in said header member, and releasably received in a hole provided in said first door, and said second securing pin being releasably received through a further hole in said header member, and releasably received in a hole provided in said second door.

23. A closure for shielding, and selectively providing access to, the targeting assembly of a particle accelerator, the particle accelerator including a housing defining an opening for accessing the targeting assembly, the particle accelerator being surrounded by a shielded enclosure providing selective access to the particle accelerator, said closure comprising:

first and second doors for selectively covering the opening in the housing of the particle accelerator, each said first and second door being fabricated substantially of copper and being movable from a closed position whereby the targeting assembly is shielded to an open position whereby access to the targeting assembly is provided, and

a door mounting assembly for mounting said first and second doors on the housing of the particle accelerator, said door mounting assembly including a frame for being secured about the opening in the particle accelerator accessing the targeting assembly, said frame being fabricated substantially of copper, said door mounting assembly also including a first hinge assembly for pivotally securing said first door to said frame and a second hinge assembly for pivotally securing said second door to said frame, whereby said first and second doors of said closure selectively cover, and reduce radiation emissions from, the opening in the housing of the particle accelerator and the targeting assembly therein when access to the particle accelerator is provided through the shielded enclosure.

24. The closure of claim 23 wherein said first door defines an interior surface which is contoured to closely receive components of the targeting assembly of the particle accelerator.

25. The closure of Claim 23 wherein each said first and second door is substantially rectangular and defines outboard and inboard edges, and

upper and lower edges, and wherein said each said first and second jamb member defines a front surface, said outboard edge of said first door being pivotally secured to said first sill member with said first hinge assembly such that said first door covers said front surface of said first jamb member when said first door is in said closed position, and said outboard edge of said second door being pivotally secured to said second sill member with said second hinge assembly such that said second door covers said front surface of said second jamb member when said second door is in said closed position.

26. The closure of Claim 25 wherein said sill member of said frame defines a first rabbet along an upper forward edge of said sill member for receiving said lower edges of said first and second doors when said first and second doors are in said closed position, and wherein said header member of said frame defines a second rabbet along a lower forward edge of said header member for receiving said upper edges of said first and second doors when said first and second doors are in said closed position.

27. The closure of Claim 26 wherein said first door defines a third rabbet along the inside of said inboard edge of said first door, and wherein said second door defines a forth rabbet along the outside of said inboard edge of said second door, whereby said inboard edges of said first and second doors overlap when said first and second doors are in said closed position.